CLAIMS

We claim:

1. A method of reducing film growth rate when growing a carbon- or boron-doped silicon film or silicon-germanium film, comprising:

carbon or boron-doping while supplying a silicon precursor and optionally a germanium precursor to a substrate, at reduced pressure of about 0.1 to 100 millitorr.

2. The method of Claim 1, including supplying germanium precursor to the substrate.

3. The method of Claim 1, wherein the film has a dopant content of about 1 x 10^{17} to 1 x 10^{21}/ cm^3.

4. The method of Claim 1, wherein the doping is at a temperature of less than 800°C.

5. A method according to claim 1, wherein the dopant is carbon.

6. A method according to claim 2, wherein the dopant is carbon.

7. A method according to claim 6, wherein the carbon doping is by a carbon precursor supply that is a single source.

8. A method according to claim 2, wherein the film has a germanium content of 1 to 30% by weight.

9. A method according to Claim 1, wherein the silicon precursor is silane supplied at a partial pressure in a range of about 0.1 to 10 millitorr.

10. A silicon or silicon-germanium film doped with carbon or boron wherein the dopant profile is spiked.

11. A film according to Claim 10, wherein the film is a silicon film.

12. A film according to Claim 10, wherein the film is a silicon-germanium film.

13. A film according to Claim 12, wherein the film has a dopant content of about 1×10^{17} to 1×10^{21}/ cm^3.

14. A transistor comprising a silicon-germanium-carbon layer with a carbon content of about 1×10^{17} to 1×10^{21}/ cm^3.

15. A method of growing a film without sharp pressure transitions, comprising:

carbon or boron-doping while supplying a silicon precursor and optionally a germanium precursor to a substrate, at reduced pressure of about 0.1 to 100 millitorr.